CLAIMS

What is claimed is:

1. A method of measuring stereoscopic image points comprising the steps of:

    a. construction of a stereoscopic model of an object using a pair of overlapping images;

    b. determination of the aiming vectors of the eyes during stereoscopic perception of that model;

    c. recording aiming vector data at the moment of eye fixation, by computing a projection of the area of fixation of the observed model on a monitor screen, for each eye; and

    d. calculating a typical point of the object being observed

2. The method as claimed in claim 1 in which said typical point is identified for the left and right eye by time synchronization.

3. The method as claimed in claim 1 or 2 in which said typical point is calculated using a vectors coplanarity equation.

4. The method as claimed in claim 1 or 2 further comprising the step of calibrating said method before starting observations by:

    a. observing of test-objects, with known position data in a main monitor;

    b. comparing positions of the centers of the pupils of the eyes with a camera; and

    c. calculating the mathematic dependencies, describing mutual transformations of said position data.

5. The method as claimed in claim 3 further comprising the step of calibrating said method before starting observations by:

    a. observing of test-objects, with known position data in a main monitor;

    b. comparing positions of the centers of the pupils of the eyes with a camera; and

5   c. calculating the mathematic dependencies, describing mutual transformations of said position data.

6. The method as claimed in claim 4 further comprising the step of presenting said test objects for observation with a condition selected from the group consisting of time, duration, order of appearance, location, size, shape, color, background, static appearance and dynamic appearance.

7. The method as claimed in claim 5 further comprising the step of presenting said test objects for observation with a condition selected from the group consisting of time, duration, order of appearance, location, size, shape, color, background, static appearance and dynamic appearance.

8. The method as claimed in claims 1 or 2 further comprising the step of visually controlling of measuring on said monitor screen by imprinting color markers into an area of image, corresponding to said fixations.

9. The method as claimed in claim 3 further comprising the step of visually controlling of measuring on said monitor screen by imprinting color markers into an area of image, corresponding to said fixations.

10. The method as claimed in claim 1 or 2 further comprising the step of visually controlling of measuring on said monitor screen by modifying the color parameters of the area of the observed image corresponding to said fixations.

11. The method as claimed in claim 3 further comprising the step of visually controlling of measuring on said monitor screen by modifying the color parameters of the area of the observed image corresponding to said fixations.

12. The method as claimed in claim 1 or 2 further comprising the step of compensating for an observer's head movements by comparing motion of the aiming vectors of both eyes with observations of movements of said observer's head.

13. The method as claimed in claim 3 further comprising the step of compensating for an observer's head movements by comparing motion of the aiming vectors of both eyes with observations of movements of said observer's head.

14. The method as claimed in claim 1 or 2 further comprising the step of compensating for an observer's head movements by tracking movements of several marks fixed on said observer's head.

15. The method of claim 3 further comprising the step of compensating for an observer's head movements by tracking movements of several marks fixed on said observer's head.

16. The method as claimed in claims 1 or 2 further comprising the steps of:

    a. tracking an observer's head movements by marks fixed close to said observer's eyes and

    b. capturing images of said marks by video-cameras tracking said observer's eyes movements.

17. The method of claim 3 further comprising the steps of:

    a. tracking an observer's head movements by marks fixed close to said observer's eyes and

    b. capturing images of said marks by video-cameras tracking said observer's eyes movements.

18. The method as claimed in claim 16 in which said marks are specially shaped.

19. The method as claimed in claim 17 in which said marks are specially shaped.

20. The method as claimed in claim 16 in which said head movement are tracked in two different planes.

21. The method as claimed in claim 17 in which said head movements are tracked in two different planes.

22. The method as claimed in claims 1 or 2 further comprising the step of determining the position of the pupil of each eye during eye movement in three-dimensional space by receiving two images of each eye from two synchronized video-cameras, fixed on opposite sides of a head.

23. The method of claim 3 further comprising the step of determining the position of the pupil of each eye during eye movement in three-dimensional space by receiving two images of each eye from two synchronized video-cameras, fixed on opposite sides of a head.

24. A device for the stereoscopic measuring of the position data of image points comprising:

    a. a left video-camera for tracking movements of an observer's left eye;

    b. a right video-camera for tracking movements of said observer's right eye;

    c. a video-camera for tracking said observer's head movements;

    d. a video-capture system for allowing capturing of an image by a personal computer;

    e. a monitor for displaying said image; and

    f. a stereo-observation system for allowing said observer to observe stereoscopic images.

25. The device as claimed in claim 24 in which said stereo observation system includes a construction made in a shape of eyeglasses.

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26. The device as claimed in claim 25 in which said eyeglasses include first specially shaped marks located in the vertical plane so that images of said first specially shaped marks are captured by said left and right video cameras.

27. The device as claimed in claim 26 in which said special shape is ellipsoidal.

28. The device as claimed in claim 26 further comprising:

    a. second specially shaped marks which are located on the horizontal plane of said eyeglasses; and

    b. a mirror fixed above said observer's head;

    whereby said video-camera is aimed so as to capture at the same time part of said observer's head and a reflection in said mirror of said second specially shaped marks.

29. The device as claimed in claim 28 in which said special shape is ellipsoidal.

30. The device as claimed in any of claims 24-29 further comprising:

    a. an additional right video camera installed to track movements of said right eye; and

    b. an additional left video camera installed to track movements of said left eye.

31. The device as claimed in any of claims 24-29 further comprising an additional monitor for visual controlling and operating the process of observation.

32. The device as claimed in any of claims 24-29 further comprising a system for infrared highlighting of said observer's eyes.

33. The device as claimed in any of claims 24-29 further comprising infrared color filters in front of said right and left video cameras.